

B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING THIRD YEAR SECOND SEMESTER - 2019

FOOD PROCESS TECHNOLOGY III

Time: Three Hours

Full Marks: 100

Use Separate Answer scripts for each part

Different parts of the same question should be answered together

Part-I

Full Marks-50

1. Answer any one from (a) and (b)
- a) i) Mention different types of juice based products
- ii) Explain the purposes of deaeration during extraction of fruit juice. 6+4
- b) Discuss about the processes of fruit juice clarification. 10
2. Answer any one from (a) and (b)
- a) State with standards different tomato products. Explain about effect of processing on colour of tomato products. 5+5
- b) Comment on hot pulping and cold pulping of tomato. Write notes on parameters for quality control of canned products. 5+5
3. Answer any one from (a), and (b)
- a) Differentiate between jam and jelly, jam and marmalade. Explain the difficulties in jelly making. 3+7
- b) Discuss about the function of pectin, sugar and acid for gel formation. 10
4. Answer any two from (a), (b) and (c)
- a) What is meant by HACCP?. State the objectives of HACCP. Explain the quality characteristics of fruit for processing. 1.5+1.5+7

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b) Discuss about the quality control in fruit processing industry. Explain about the prevention of biological hazards for food. 7+3

c) What is hazard? What are the sources of different types of hazards? 1.5+8.5

PART- II (50 MARKS)**USE SEPARATE ANSWER SCRIPT FOR EACH PART**

Q1. Answer either (a) or (b) in this block.**(a) Describe the following (any 1):****1 × 5 = 5**

1. Solvent free extraction of flavor volatiles
2. Spray drying of flavor volatiles

(b) Define the following:**5 × 1 = 5**

1. Concrete
2. Plastic shortening
3. SHU
4. KFO
5. Duo-Trio test

Q2. Differentiate between (any 2):**2 × 5 = 10**

- a. Quality specification tests for 'King' and 'Queen' of spices
- b. Picker unit vs. Extrusion unit in plastic fat manufacture
- c. Solvent extract vs. Supercritical carbon dioxide extract

Q3. Answer any two from (a), (b) and (c) in this block.**5 + 5 = 10**

- (a) The importance of sequence of perception of flavor components in adjudging flavor profile of 'beer' by sensory evaluation
- (b) 'Quality' not 'Authenticity' is preferred for herbs and spices
- (c) Methods of detection of 'Sandiness in turmeric' and 'Silicone oil in garlic oil'

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Q4. Answer any one from (a) and (b) in this block.

5

- (a) Illustrate a detailed process of manufacture of 10-fold vanillin.
- (b) Illustrate analytical methods to quantify the flavor impact compound of 'rose V/O'.

Q5. Answer any two from (a), (b) and (c) in this block.

10 + 10 = 20

- (a) Design an extended triangle test for assessment of vanilla-flavored ice cream manufactured in your company (consider competitor sample has synthetic vanillin). Out of 20 tests, how many correct results are expected in a paired comparison test at 0.1% level of error?
- (b) Critically analyze the differences between 'ethanolic distillation' and 'molecular distillation' of fennel essential oil.
- (c) Critically analyze the processes for production of *pineapple essence* for use as natural flavoring.